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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,938	07/18/2001	Kiyoshi Nishio		4331

23364 7590 06/02/2004

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EXAMINER	
TYLER, CHERYL JACKSON	
ART UNIT	**PAPER NUMBER**
3746	

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/868,938	NISHIO ET AL.	
	Examiner	Art Unit	
	Cheryl J. Tyler	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL ACTION

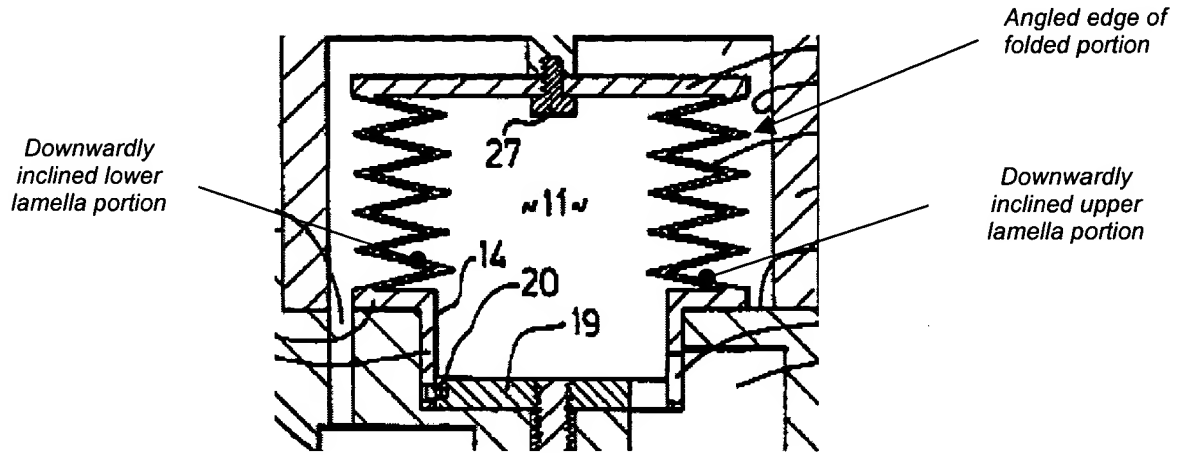
Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*
>
> *This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).*

2. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomin et al. (WO 99/31388) in view of Boedecker et al. (4,655,690) and Thompson (3,394,631). Thomin et al. teach a fluid apparatus having a bellows 12 with extending and contracting portions configured by forming ridge-like folds and valley-like folds 18 in a vertically alternate and continuous manner, that are extendingly and contractingly deformable in an axial direction. The bellows are placed in a pump body 1 such that the axial direction defines a vertical axis. Figure 2 illustrates an inner pumping chamber 11 (corresponding to the claimed liquid chamber) formed inside of bellows 12; an outer pumping chamber 10 (corresponding to the claimed air chamber) formed outside of the bellows 12; and a suction (or inflow, as in claim 4) port 43 and a discharge (or outflow, as in claim 4) port 45 formed in an inner bottom face of the pump body facing the inner pumping chamber. Figure 2 further illustrates that the bellows are formed into a shape

in which a lower one of upper and lower lamella portions of each of the ridge-like folds is downwardly inclined toward the vertical axis, in both the extending and contracting state (see the accompanying figure), and in the contracting state, the upper and lower lamella portion of each ridge-like fold is formed to be downwardly inclined.



While there are instances of functional language in the claims, a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the claims, as is the case here, and were not specifically addressed.

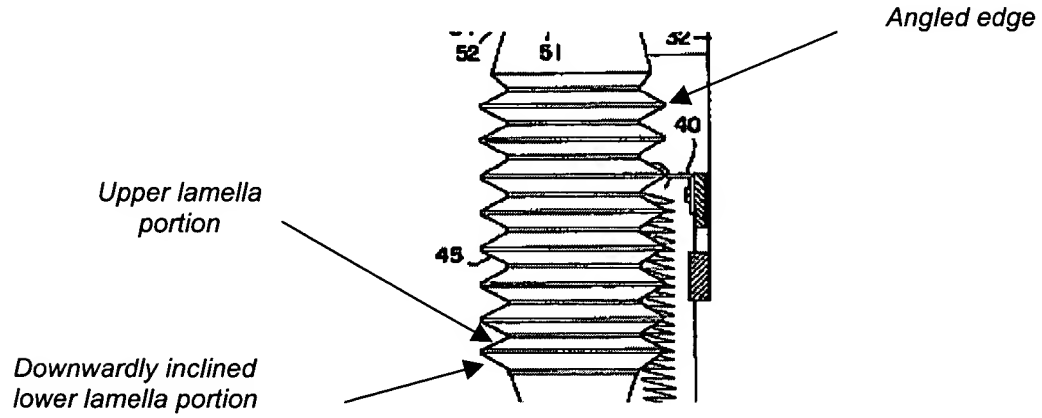
While Thomin et al. teach most of the limitations of the claims, they do not explicitly teach that the bellows have vertically extending portions connecting their respective extending and contracting portions. Thompson teaches such a coating 26 (corresponding to the claimed vertically extending portion) that "serves to form a flexible seal between each of the adjacent washer surfaces thereby avoiding the necessity for special treatment of the mating surfaces" (column 4, lines 69-72). Therefore, it would

have been obvious to one of ordinary skill in the art to include a vertically extending portion, as taught by Thompson, in the Thomin et al. invention in order to advantageously seal the surfaces, and enable the bellows to be assembled as a singly contained unit that is easily assembled into the pump.

While Thomin et al., as modified by Thompson, teach most of the limitations of the claims, they do not explicitly teach that the bellows can be made of polytetrafluoroehtylene. Boedecker et al. teach using a "flexible plastic which is resistant to chemicals, preferably polytetrafluoroethylene" (see column 2, lines 28-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a plastic bellows made of polytetrafluoroehtylene, as taught in the Boedecker et al. invention, in the Thomin et al. invention, as modified by Thompson, in those cases where caustic fluid is to be pumped in a piping in order not to damage the bellows.

3. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hope et al. (4,231,724) in view of Boedecker et al. (mentioned previously) and Thompson (mentioned previously). Hope et al. teach a fluid apparatus having a bellows 45 configured by a pump in which a bellows that has an extending an contracting portion configured by forming ridge-like folds and valley-like folds in a vertically alternate and continuous manner (see column 5, lines 7-13), and that is extendingly and contractingly deformable in an axial direction. The bellows 45 are placed in a main frame 12 (corresponding to the claimed pump body) such that the axial direction extends along a vertical axis, and include a chamber inside of the bellows. Hope et al.

further teach a suction port 83 and a discharge port 63 and that the extending and contracting portion of the bellows is formed into a shape in which a lower one of upper and lower lamella portions of each of the ridge-like folds is downward inclined toward the vertical axis, in both the extending and contracting state (see the accompanying figure), and in the contracting state, the upper and lower lamella portion of each ridge-like fold is formed to be downwardly inclined. With regards to claim 10, since the bellows are exposed to air, it stands to reason that there is an air chamber outside of the bellows. That is, outside of the bellows 4 and within main frame 12, constitutes the claimed air chamber.



While Hope et al. teach most of the limitations of the claims, they do not explicitly teach that the ports are in an inner bottom face of the pump body facing the liquid chamber. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the ports in an inner bottom face of the pump body in order to advantageously reduce the number of elements in the fluid apparatus. By reducing the number of elements, the cost of the apparatus and the manufacturing

times may be reduced. Further, it would reduce the overall height and weight of the apparatus by incorporating the ports in the pump body.

While there are instances of functional language in the claims, a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the claims, as is the case here, and were not specifically addressed.

While Hope et al. teach most of the limitations of the claims, they do not explicitly teach that the bellows have vertically extending portions connecting their respective extending and contracting portions. Thompson teaches such a coating 26 (corresponding to the claimed vertically extending portion) that "serves to form a flexible seal between each of the adjacent washer surfaces thereby avoiding the necessity for special treatment of the mating surfaces" (column 4, lines 69-72). Therefore, it would have been obvious to one of ordinary skill in the art to include a vertically extending portion, as taught by Thompson, in the Hope et al. invention in order to advantageously seal the surfaces, and enable the bellows to be assembled as a singly contained unit that is easily assembled into the pump.

While Hope et al., as modified by Thompson, teach most of the limitations of the claims, they do not explicitly teach that the bellows can be made of polytetrafluoroehtylene. Boedecker et al. teach using a "flexible plastic which is resistant to chemicals, preferably polytetrafluoroethylene" (see column 2, lines 28-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to use a plastic bellows made of polytetrafluoroehtylene, as taught in the Boedecker et al. invention, in the Hope et al. invention, as modified by Thompson, in those cases where caustic fluid is to be pumped in a piping in order not to damage the bellows.

4. Claims 8-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hope et al. (mentioned previously), as modified by Thompson (mentioned previously) and Boedecker et al. (mentioned previously) in view of Eickmann (4,984,970). Hope et al., as modified by Thompson and Boedecker et al., teach most of the limitations of the claims, except the inclination angle of the lower lamella portion of the bellows. Eickmann teaches the criticality of choosing the correct angle in order to enable the bellowed portions to withstand higher pressures without failing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the cited dimensions, without undue experimentation, in order to withstand the maximum amount of pressure. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the cited dimensions, as discussed by Eickmann, in the Hope et al., as modified by Thompson and Boedecker et al., invention in order to advantageously achieve the maximum amount of pressure in the bellows without the bellows failing.

Response to Arguments

5. Applicant's arguments with respect to claims 7-12 have been considered but are not persuasive in view of the new ground(s) of rejection. While the applicant attempted

to discuss a proposed claim amendment, the Examiner and applicant were not successful in having such a discussion.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheryl J. Tyler whose telephone number is 703-306-2772. The examiner can normally be reached on Monday-Thursday, 6:00 - 10:30 am.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine R. Yu can be reached on 703-308-2675. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cheryl J. Tyler
Primary Examiner
Art Unit 3746

CJT